

Amendment under 37 C.F.R. §1.111

Serial No. 10/718,677

Attorney Docket No. 032121

Amendments to the Drawings:

The attached sheet of drawings includes changes to Figures 1, 2A-2C, 3A-3B, 4, 5 and 6A-6B. The amended figures have been labelled with the designation “Related Art”.

REMARKS

Claims 1-21 are pending. Claims 1-6 and 14 have been withdrawn from consideration. Claims 7-9, 13, 15-17 and 21 have been amended herein. Support for the amendments is set forth below.

Applicants' Response to the Objection to the Drawings

Figures 1, 2A-2C, 3A-3B, 4, 5 and 6A-6B stand objected to for failing to be labeled as Prior Art. In response thereto, applicants have amended the Figures to include the designation "Related Art."

Applicants' Response to the Claim Rejections under 35 U.S.C. §103

Claims 7, 13, and 15 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Applicants' admitted prior art in view of **Cobbley et al.** (US 6,965,160 B2). In response thereto, applicants have amended claims 7 and 15 to more distinctly claim the subject matter regarded as the invention. Specifically, Applicants have added the limitation that at least one opening is formed in the substrate sheet and mold resin is filled through the opening. Applicants have taken the limitation from allowable claims 8, 9, 16 and 17 and added it to independent claims 7 and 15. Allowable claims 8, 9, 16 and 17 have been amended to recite the position of the openings, respectively. Applicants' admitted prior art and **Cobbley** do not teach or suggest injecting resin through through-holes in a circular substrate.

Claims 11 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Applicants' admitted art in view of **Shimizu et al.** (US 6,676,885 B2) and claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Applicants' admitted prior art in view of

Cobbley et al. as applied to claim 15 above, and further in view of **Shimizu**. The Office Action maintains that **Shimizu** discloses the limitations of (1) at least one through-hole in an area other than an area where the substrates are formed and (2) introducing a mold resin through the through-holes into a backside of the substrate sheet material so as to form resin part on the backside. Applicants respectfully traverse.

Shimizu does not disclose forming through-holes in the substrate. The disclosures the Office cites to in Figures 4A, 4C and 4D are to a method of encapsulation. A single circuit base member 11 is placed between molding die 21 and 22. Resin 26 is injected into a side chamber 29-31 to encapsulate chips 12 on the circuit base member 11. There is no disclosure of forming through-holes in the circuit base member 11.

Contrary in the present invention, pursuant to Figures 20 and 21 A-H, the substrate 50 on which the chips are mounted has through holes 51. Page 29, line 30 to page 30, line 16 of the specification.

Shimizu's disclosure of absorption holes 45 in the circuit board mounting block 42 of the bottom molding die 22 are not holes in the substrate. These holes 45 and 45a are in the mounting block 42 to vacuum hold a circuit board 11. See Col. 13, lines 27-42. There is no disclosure of holes formed in the circuit board. If anything, holes in the circuit board in **Shimizu** would interfere with the vacuum hold on the board. Hence, **Shimizu** does not teach each and every limitation of the claimed invention.

Claim 21 stands rejected under 35 U.S.C. 103(a) as being unpatentable over Applicants' admitted prior art in view of **Cobbley** and **Farnworth**. In response thereto, applicants have amended claim 21 to more distinctly claim the subject matter regarded as the invention.

Specifically, amended claim 21 includes the feature that only the principle surface is immersed in the dissolved resin. This limitation is not taught or suggested by the prior art.

Farnworth does not teach or suggest this limitation because the whole substrate 12 is placed in the resin bath 60. Farnsworth teaches specific angles at which the substrates should enter the resin 60. See Fig. 6 and Col. 10, lines 20-25 and Col. 10, line 62 to Col. 11, line 3. Further, **Farnworth** does not teach immersion wherein the IC chip is placed first in the resin. However, Applicants teach inverting the substrate so that the chips face the resin 77 and are immersed without the circuit board 70. See page 38, lines 10-20 and Figures 34(a) to 34(e) of the application.

In view of the aforementioned amendments and accompanying remarks, Applicants submit that the claims, as herein amended, are in condition for allowance. Applicants request such action at an early date.

If the Examiner believes that this application is not now in condition for allowance, the Examiner is requested to contact Applicants' undersigned attorney to arrange for an interview to expedite the disposition of this case.

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If this paper is not timely filed, Applicants respectfully petition for an appropriate extension of time. The fees for such an extension or any other fees that may be due with respect to this paper may be charged to Deposit Account No. 50-2866.

Respectfully submitted,

WESTERMAN, HATTORI, DANIELS & ADRIAN, LLP

A handwritten signature in black ink, appearing to read "Michael J. Caridi", with a long, sweeping horizontal stroke extending to the right.

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Enclosures: Replacement Figures 1, 2A-2C, 3A-3B, 4, 5 and 6A-6B